

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 4239-66903	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US03/29833	International filing date (<i>day/month/year</i>) 18 September 2003 (18.09.2003)	(Earliest) Priority Date (<i>day/month/year</i>) 19 September 2002 (19.09.2002)
Applicant THE GOVERNMENT OF THE UNITED STATES OF AMERICA		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 7 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the Report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☒ Unity of invention is lacking (See Box II).

4. With regard to the title,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the abstract,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. _____



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.



None of the figures

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International application No.

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Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-20 and 25-38

Remark on Protest

☐
☐

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

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International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 38/00, 39/00, 39/38; C07K 16/00; C07H 21/02, 21/04

US CL : 424/184.1, 185.1; 530/300, 350; 536/23.1;

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/184.1, 185.1; 530/300, 350; 536/23.1;

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	SAMBROOK et al. Molecular Cloning A Laboratory Manual. Second Edition. Cold Spring Harbor Laboratory Press. 1989, Vol. 3, pages 16.2 to 16.81, see entire document.	13-20
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A		3, 4, 9, 10
Y	CAMPBELL, A. M. Monoclonal Antibody Technology. New York: Elsevier Science Publishing Company, Inc. 1984, pages 1-32, see in particular page 29, section 1.3.4.	25-38
X	Database A Genseq_29 January 2004. Accession Number ABB71995. 26 March 2002, residues 671-682 are 100% identical to residues 385-396 of SEQ ID NO:1.	1, 2, 5-8, 11, 12
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Y		13-20, 25-38
X	Database A Genseq_29 January 2004. Accession Number ABG718028. 18 February 2002, residues 254-261 are 100% identical to residues 141-148 of SEQ ID NO:3.	1, 2, 5-8, 11, 12
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Y		13-20, 25-38



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

07 October 2004 (07.10.2004)

Date of mailing of the international search report

04 JAN 2005

Name and mailing address of the ISA/US

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Commissioner for Patents
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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	Database SPTreMBL. Accession Number Q95WD8. 19 December March 2001, residues 253-261 are 100% identical to residues 243-251 of SEQ ID NO:5 and residues 240-261 are 100% identical to residues 244-252 of SEQ ID NO:7.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database SPTreMBL. Accession Number Q23404. 06 June 1998, residues 190-197 are 100% identical to residues 505-515 of SEQ ID NO:9.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database A_Genseq_29 January 2004. Accession Number AAG03191. 06 October 2000, residues 91-98 are 100% identical to residues 1-8 of SEQ ID NO:11.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database A_Genseq_29 January 2004. Accession Number ABG24332. 18 February 2002, residues 6-13 are 100% identical to residues 234-241 of SEQ ID NO:13.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database SPTreMBL. Accession Number Q9HNC7. 16 March 2001, residues 93-100 are 100% identical to residues 8-15 of SEQ ID NO:15.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database A_Genseq_29 January 2004. Accession Number AAU48010. 27 February 2002, residues 105-112 are 100% identical to residues 61-68 of SEQ ID NO:17.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database SPTreMBL. Accession Number Q95WE2. 01 December 2001, residues 24-34 are 100% identical to residues 23-33 of SEQ ID NO:19.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database PIR_78. Accession Number G81431. 31 March 2000, residues 6-13 are 100% identical to residues 8-15 of SEQ ID NO:21.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database SPTreMBL. Accession Number Q9XZ44. 12 November 1999, residues 105-118 are 100% identical to residues 107-120 of SEQ ID NO:23.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database A_Genseq_29 January 2004. Accession Number AAB94843. 26 June 2001, residues 319-326 are 100% identical to residues 5-12 of SEQ ID NO:25.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database A_Genseq_29 January 2004. Accession Number ABB61398. 26 March 2002, residues 225-234-682 are 100% identical to residues 133-142 of SEQ ID NO:27.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database A_Genseq_29 January 2004. Accession Number AAB42952. 08 February 2001, residues 259-270 are 100% identical to residues 23-34 of SEQ ID NO:29.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38

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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	Database SPTreMBL. Accession Number Q9RVD4. 01 May 2000, residues 62-69 are 100% identical to residues 148-155 of SEQ ID NO:31.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database SPTreMBL. Accession Number Q95WE2. 01 December 2001, residues 181-190 are 100% identical to residues 178-187 of SEQ ID NO:33.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database PIR_78. Accession Number B64020. 10 September 1999, residues 10-17 are 100% identical to residues 10-17 of SEQ ID NO:35.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database A_Genseq_29 January 2004. Accession Number ABB57882. 26 March 2002, residues 477-486 are 100% identical to residues 119-128 of SEQ ID NO:37.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database PIR_78. Accession Number T50116. 09 June 2000, residues 219-226 are 100% identical to residues 10-17 of SEQ ID NO:39.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database PIR_78. Accession Number F90270. 24 May 2001, residues 372-380 are 100% identical to residues 53-61 of SEQ ID NO:41.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database A_Genseq_29 January 2004. Accession Number ABB58845. 26 March 2002, residues 207-217 are 100% identical to residues 185-195 of SEQ ID NO:43.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database A_Genseq_29 January 2004. Accession Number AAB83185. 09 July 2001, residues 99-106 are 100% identical to residues 89-96 of SEQ ID NO:45.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38
X --- Y	Database Swissprot_42. Accession Number Q57124. 10 November 1997, residues 346-353 are 100% identical to residues 9-16 of SEQ ID NO:47.	1, 2, 5-8, 11, 12 ----- 13-20, 25-38

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Group I, claim(s) 1-20 and 25-38, drawn to *P. ariasi* salivary polypeptides, nucleic acids, vectors, host cells and methods.

Group II, claim(s) 21-24, drawn to antibodies that bind *P. ariasi* salivary polypeptides.

Group III, claim(s) 39-58 and 64-76, drawn to *P. perniciosus* salivary polypeptides, nucleic acids, vectors, host cells and methods.

Group IV, claim(s) 59-62, drawn to antibodies that bind *P. perniciosus* salivary polypeptides.

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In order for more than one species to be examined, the appropriate additional examination fees must be paid. The species are as follows:

The antibodies of Group II that bind different polypeptides of Group I:

SEQ ID NO:1,
SEQ ID NO:3,
SEQ ID NO:5,
SEQ ID NO:7,
SEQ ID NO:9,
SEQ ID NO:11,
SEQ ID NO:13,
SEQ ID NO:15,
SEQ ID NO:17,
SEQ ID NO:19,
SEQ ID NO:21,
SEQ ID NO:23,
SEQ ID NO:25,
SEQ ID NO:27,
SEQ ID NO:29,
SEQ ID NO:31,
SEQ ID NO:33,
SEQ ID NO:35,
SEQ ID NO:37,
SEQ ID NO:39,
SEQ ID NO:41,
SEQ ID NO:43,
SEQ ID NO:45, and
SEQ ID NO:47.

The polypeptides and nucleic acids of Group III as follows:

SEQ ID NO:49,
SEQ ID NO:51,
SEQ ID NO:53,
SEQ ID NO:55,
SEQ ID NO:57,
SEQ ID NO:59,
SEQ ID NO:61,
SEQ ID NO:63,
SEQ ID NO:65,
SEQ ID NO:67,
SEQ ID NO:69,
SEQ ID NO:71,
SEQ ID NO:73.

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SEQ ID NO:75,
SEQ ID NO:77,
SEQ ID NO:79,
SEQ ID NO:81, and
SEQ ID NO:83.

The antibodies of Group IV that bind different polypeptides of Group III:

SEQ ID NO:49,
SEQ ID NO:51,
SEQ ID NO:53,
SEQ ID NO:55,
SEQ ID NO:57,
SEQ ID NO:59,
SEQ ID NO:61,
SEQ ID NO:63,
SEQ ID NO:65,
SEQ ID NO:67,
SEQ ID NO:69,
SEQ ID NO:71,
SEQ ID NO:73,
SEQ ID NO:75,
SEQ ID NO:77,
SEQ ID NO:79,
SEQ ID NO:81, and
SEQ ID NO:83.

Continuation of B. FIELDS SEARCHED Item 3:

DIALOG, WEST, EMBASE, COMMERICAL SEQUENCE DATABASES.

SEARCH TERMS: P. araisi, saliva, salivary, polypeptide, peptide, antigen, isolate, purify, SEQ ID NOS:1-47.